Fungal infection

37B-B3

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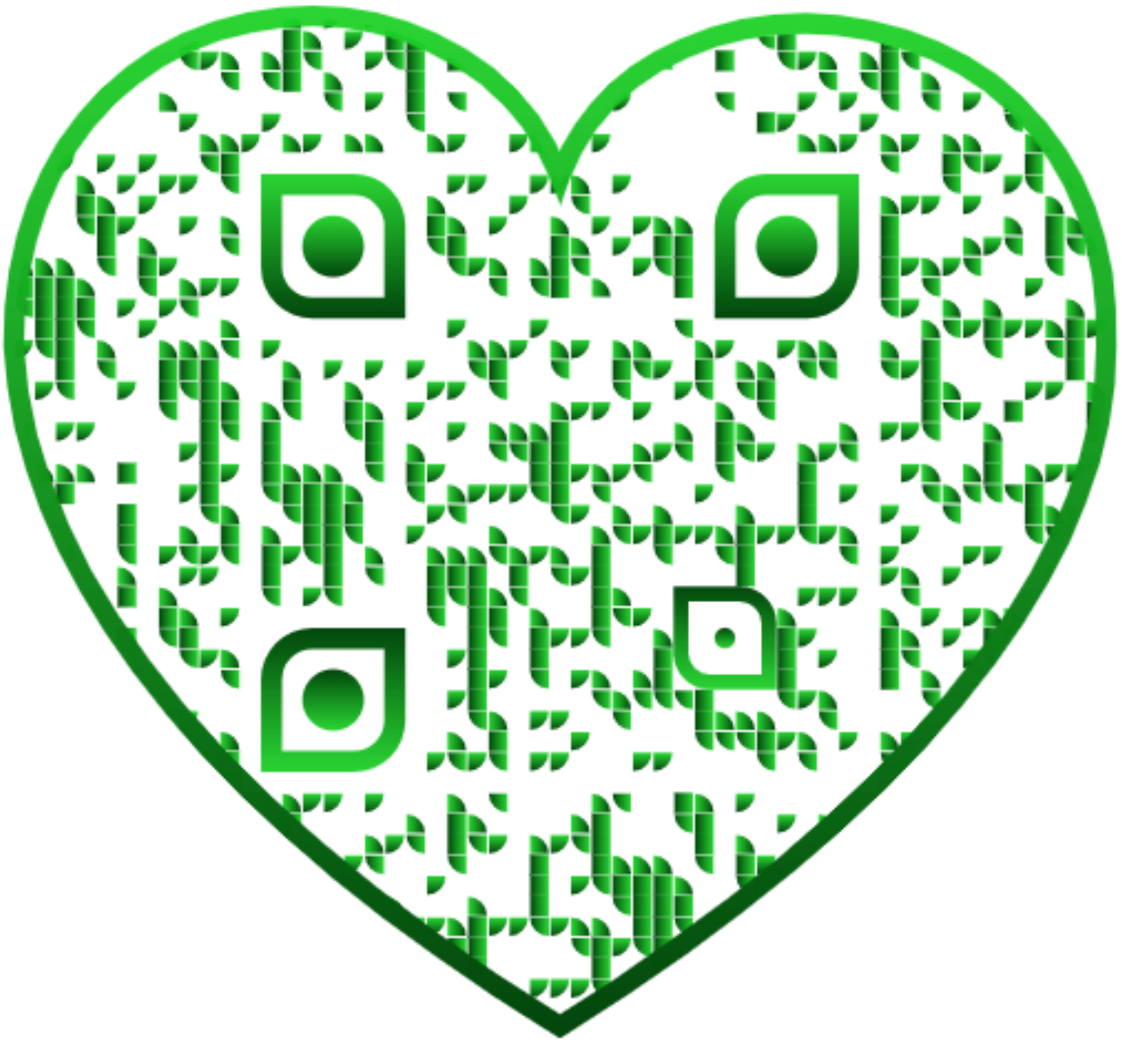


Tinea (dermatophyte)

1. Tinea capitis (affection of the scalp):

-Scaly ringworm. -black-dot ringworm

-kerion. -favus

2.Tinen barbae (affection of the beard)

3. Tinea corporis (affection of the glabrous, i.e. hairless, skin).

4. Tinea cruris (affection of the genitocrural area).

5. Tinea pedis (affection of feet) and manum (affection of hand)

6. Tinea unguium (onychomycosis; affection of nails)

Tinea CAPITUS

(ring worms of scalp)

Diagnosis :scaly worm

Causes: Fungal(Tinea = trichophyton violaceum + microsporum)

Lesion :PRY (single or Multiple well defined round patch)

hair short cut

- 2nd(scaly)No scar

Figure 26-43. Tinea capitis: "gray patch" type A large, round, hyperkeratotic plaque of alopecia due to breaking off of hair shafts close to the surface, giving the appearance of a mowed wheat field on the scalp of a child. Remaining hair shafts and scales exhibit a green fluorescence when examined with Wood's lamp. *M. canis* was isolated on culture.

Tinea CAPITUS
(ring worms of scalp)

Diagnosis :black-dot ringworm

Causes: Fungal(Tinea = trichophyton violaceum)

Lesion :PRY (single or Multiple well defined round patch)

hair broken = black stumps

- 2nd(scaly) No scar

Figure 26-44. Tinea capitis: "black dot" variant A subtle, asymptomatic patch of alopecia due to breaking off of hairs on the frontal scalp in a 4-year-old black child. The lesion was detected because her infant sister presented with tinea corporis. *T. tonsurans* was isolated on culture.

Tinea CAPITUS
(ring worms of scalp)

Diagnosis :kerion

Causes: Fungal(Tinea = trichophyton violaceum +trichophyton mentagrophytes)

Lesion:PRY(single or Multiple boggy swelling studded with pustule)

hair easily detached

- may Healing scar alopecia

Figure 26-45. Kerion A 5-year-old black boy with an inflammatory mass on the scalp unresponsive to oral antibiotics. The bobby swelling with multiple pustules and postauricular lymphadenopathy. *T. tonsurans* was isolated on fungal culture. He was successfully treated with oral terbinafine for 4 weeks. (From Proudfoot LE, Morris-Jones R. Kerion celsi. *N Engl J Med* 2012;366:1142. Used with permission.)

Tinea CAPITUS
(ring worms of scalp)

Diagnosis :Favus

Causes: Fungal(Tinea = trichophyton schoenleinii)

Lesion: (diffuse involved entire scalp thick yellow adherent crust)

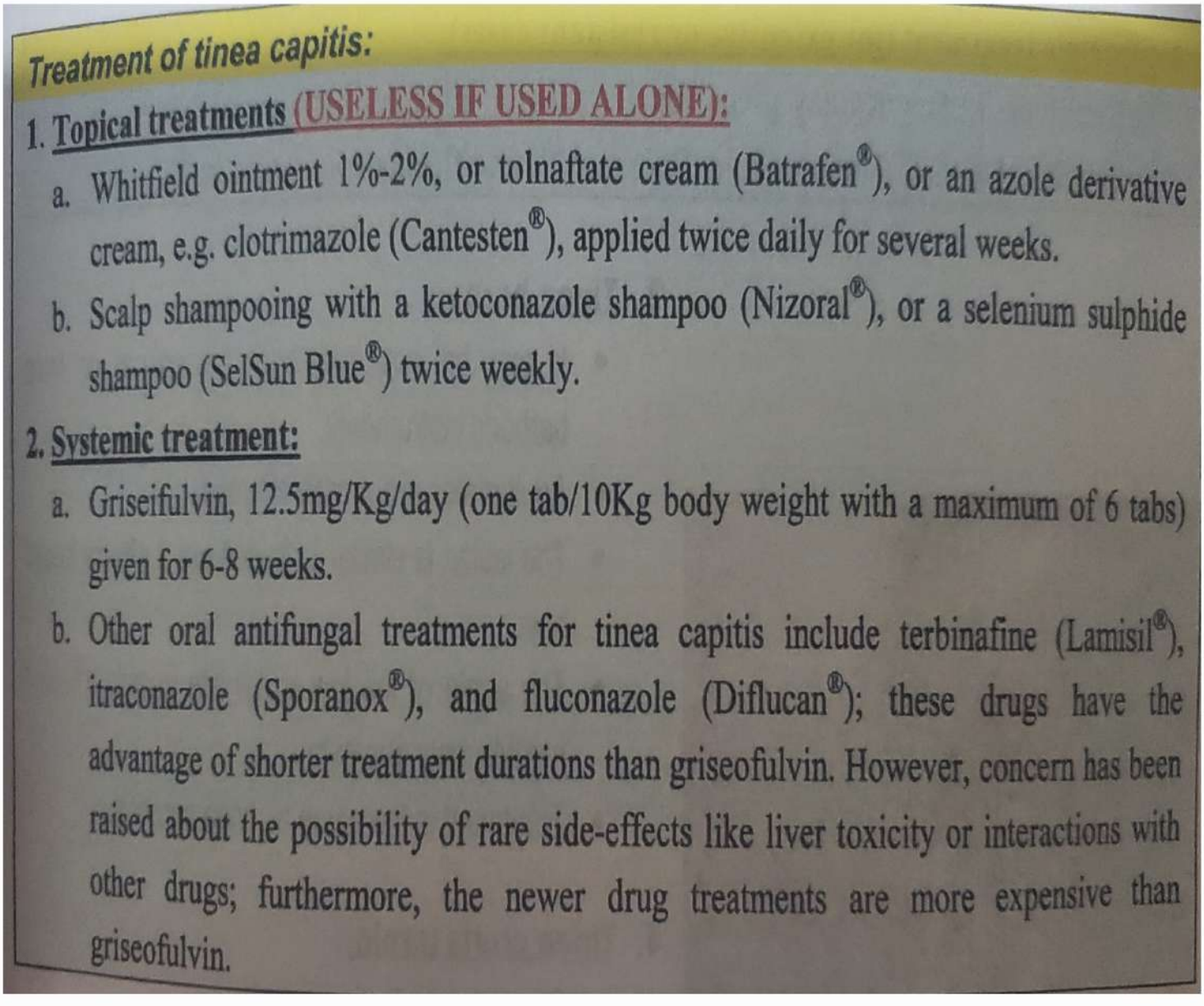
sulfur cup shape or scutula

Must be healing with permanent scar and alopecia (coconut hair)

Figure 26-46. Tinea capitis: favus Extensive hair loss with atrophy, scarring, and so-called scutula, i.e., yellowish adherent crusts present on the scalp; remaining hairs pierce the scutula. *T. schoenleinii* was isolated on culture.

Tinea Capitis

Fungal Infection of Scalp



Treatment of tinea capitis:

1. **Topical treatments (USELESS IF USED ALONE):**
   a. Whitfield ointment 1%-2%, or tolnaftate cream (Batrafen®), or an azole derivative cream, e.g. clotrimazole (Cantesten®), applied twice daily for several weeks.
   b. Scalp shampooing with a ketoconazole shampoo (Nizoral®), or a selenium sulphide shampoo (SelSun Blue®) twice weekly.
2. **Systemic treatment:**
   a. Griseifulvin, 12.5mg/Kg/day (one tab/10Kg body weight with a maximum of 6 tabs) given for 6-8 weeks.
   b. Other oral antifungal treatments for tinea capitis include terbinafine (Lamisil®), itraconazole (Sporanox®), and fluconazole (Diflucan®); these drugs have the advantage of shorter treatment durations than griseofulvin. However, concern has been raised about the possibility of rare side-effects like liver toxicity or interactions with other drugs; furthermore, the newer drug treatments are more expensive than griseofulvin.

Differential diagnosis

1.Other causes of scaly scalp, e.g. seborrheic dermatitis, impetigo, and psoriasis.

2. Causes of localized noncicatricial alopecia, e.g. alopecia areata and trichotillomania.

Tinea corporis
(ring worm 'tinea circinate)

Diagnosis : tinea corporis

Causes: Fungal(Tinea = trichophyta +microspora)

Lesion :PRY (well-defined circinate Lesion risad edge with papule,pustule)

- 2nd(crust)

DD : Circinate Impetigo + pityriasis rosea

Source: Neil S. Prose, Leonard Kristal: Weinberg's
Color Atlas of Pediatric Dermatology, Fifth Edition
www.accesspediatrics.com
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Figure 26-36. Tinea corporis: tinea incognito An 80-year-old male with a rash on buttocks for 1 year. Erythematous patches on the buttocks, some with sharp margination, others with clearing, and excoriations. He had been treating the pruritus with topical corticosteroid. Tinea cruris, tinea pedis, and onychomycosis were also present.

Figure 26-39. Tinea corporis: inflammatory A 13-year-old female with inflammatory lesion on the arm for 1 week. A younger sibling had tinea capitis. Acutely inflamed edematous exudative annular plaque on the upper arm.

Figure 26-37. Tinea corporis A 80-year-old female with red, scaling lesions on the lower leg. Lesions were present under a foot brace that occluded the skin. Corticosteroid has been applied to the site. Tinea corporis was associated with tinea pedis and onychomycosis (see inset).

Figure 26-38. Tinea corporis: tinea incognito A 60-year-old renal transplant recipient has been treating thigh rash with topical corticosteroid for several months. Blotchy erythema with areas of atrophy and scale on the right medial upper thigh bordering the inguinal area. Tinea pedis and onychomycosis were also present. KOH preparation showed septated hyphae. Topical steroid facilitates dermatophyte growth, suppressing the immune response, creating an undiagnosed infection, tinea incognito.

Tinea barbae

Diagnosis : tinea barbae

Causes: Fungal(Tinea)

Lesion :PRY (pustule) like kerion but affect hair

Figure 26-47. Tinea barbae A 63-year-old male with pustules in beard area for several months. A large pustule in an inflammatory nodule is seen on the moustache area. Extensive subtle tinea facialis was also present. Tinea pedis, onychomycosis, and tinea cruris were present as well. KOH preparation was positive; *T. rubrum* was detected on dermatophyte culture. Bacterial culture was negative for pathogens. Facial lesions resolved with oral terbinafine.

Figure 26-48. Tinea barbae with kerion and tinea facialis Confluent, painful papules, nodules, and pustules on the upper lip (kerion). Epidermal dermatophytosis (tinea facialis) with sharply marginated erythema and scaling is present on the cheeks, eyelids, eyebrows, and forehead. *T. mentagrophytes* was isolated on culture. In this case, the organism caused two distinct clinical patterns (epidermal involvement, tinea facialis versus follicular inflammation, tinea barbae), depending on whether glabrous skin or hairy skin was infected (see also Fig. 26-23).

Tinea cruris
(groin)

Diagnosis : tinea cruris

Causes: Fungal(Tinea = trichophyton rubrum +epidermophyton floccosum)

Lesion :PRY (well-defined erythematous patch ,raisd edge)

TINEA CRURIS (JOCK ITCH)
Source: Richard P. Usatine, Mindy Ann Smith, Heidi S. Chumley, Camille Sabella, E.J. Mayeaux, Jr., Elumalai Appachi: The Color Atlas of Pediatrics: www.accesspediatrics.com
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Figure 26-33. Tinea cruris (inguinalis): acute A 80-year-old female with pruritic inguinal rash for several weeks. She was being treated with prednisone for polymyalgia rheumatica. Typical inflamed rings and arcs are seen on the proximal thigh and adjacent inguinal area.

Figure 26-34. Tinea cruris (inguinalis): subacute A 20-year-old male with pruritic inguinal rash for several months. He was a college wrestler. Concomitant dermatophyte infection was also present on the feet, trunk, and face. He was treated with oral terbinafine.

Figure 26-35. Tinea cruris (inguinalis): chronic A 65-year-old male with pruritic inguinal rash for many months. The skin of the proximal thigh is lichenified from chronic rubbing and scratching. He had applied topical corticosteroid to the site. He also had tinea pedis and onychomycosis.

Tinea axillaries

Diagnosis : tinea axillaries

Causes: Fungal(Tinea)

Lesion :PRY (well-defined erythematous patch ,raisd edge , dark of skin)

Photo 5-8: Tinea axillaris.

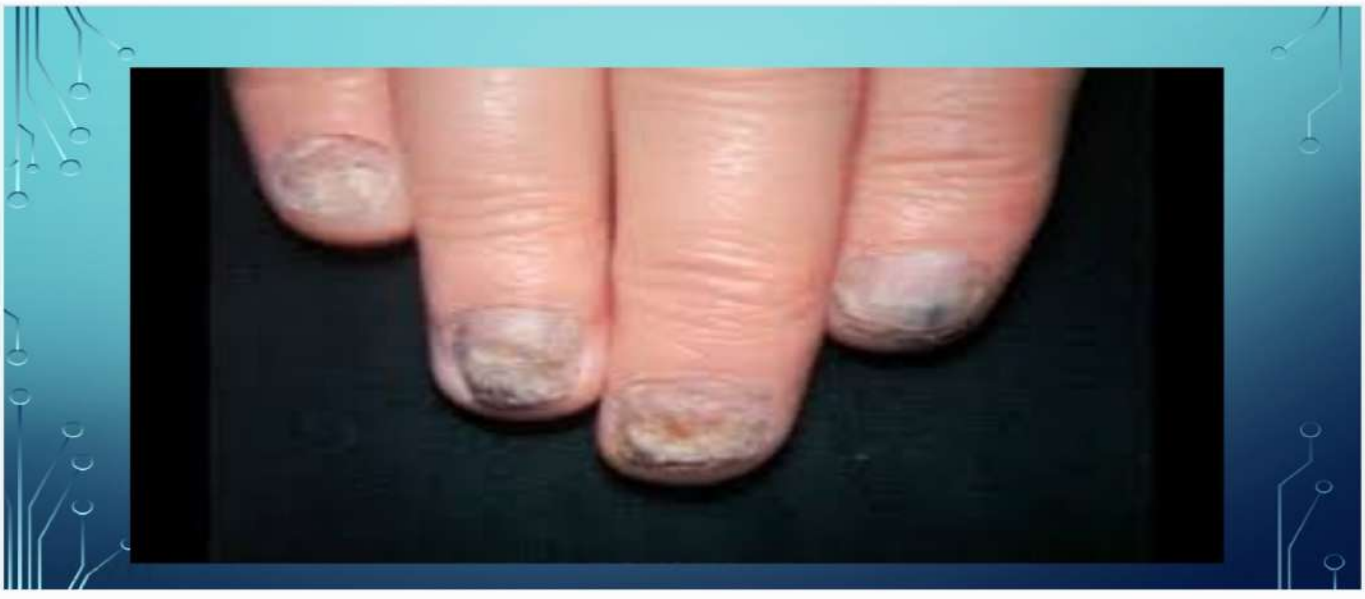
Fungal infection of nail plate (Onchycomycosis)

Diagnosis : tinea axillaries

Causes: Fungal(Tinea)

Lesion :Affected nails appear yellowish or greenish, lusterless, brittle, and friable with evidence of subungual hyperkeratosis.

Figure 26-25. Tinea pedis and onychomycosis in father and son The foot of a 5-year-old male with tinea pedis (ringworm lesion) and toenail dystrophy shown with his father's foot with similar, but more advanced, findings. The son most likely became infected with dermatophyte from fomite in his home. Both father and son had atopic diathesis with history of atopic dermatitis.



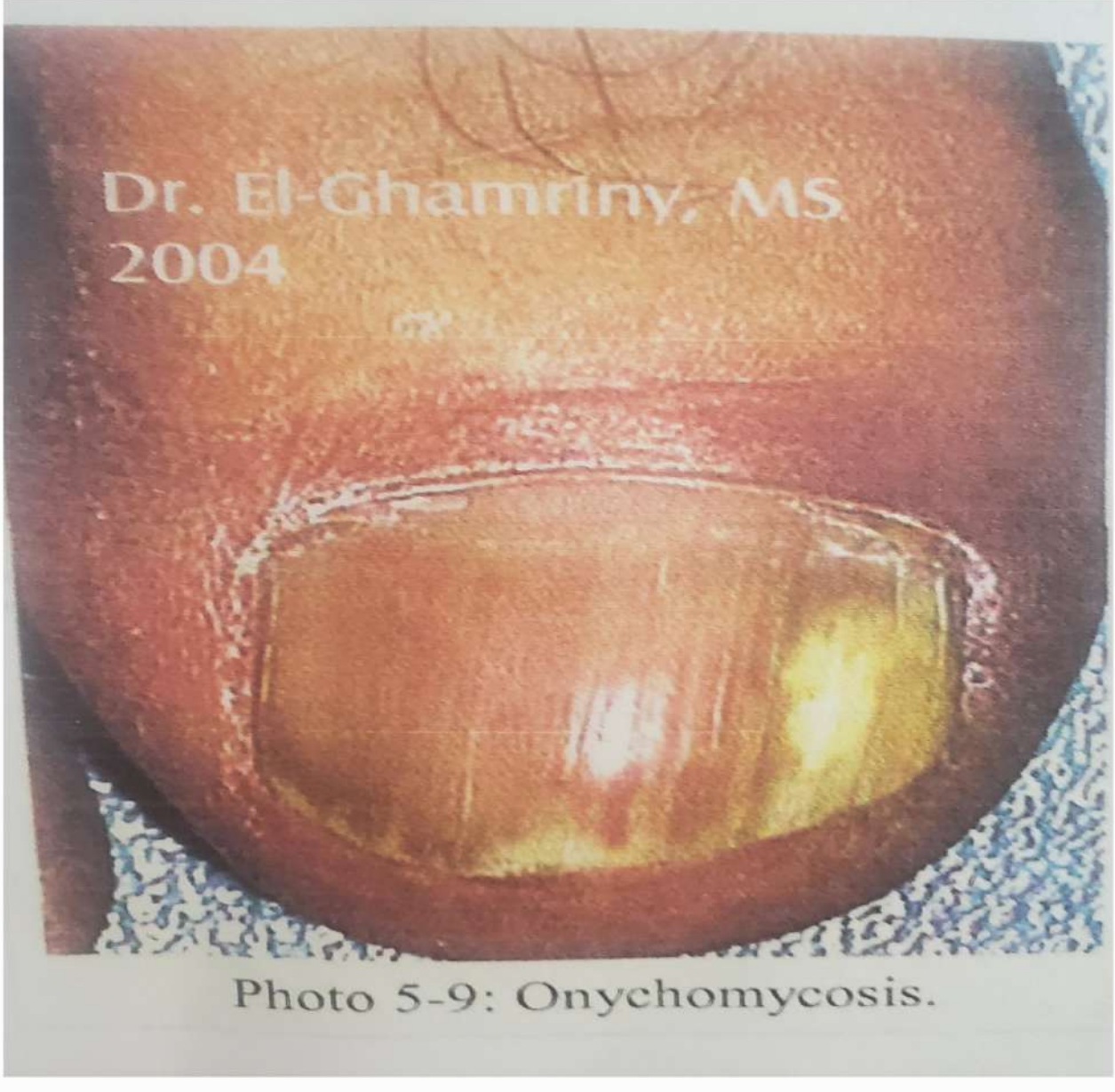


Photo 5-9: Onychomycosis.

Tinea pedis
(Athlete's foot)

Diagnosis : chronic interdigitalis (marecerated toe-web)

Causes: Fungal(Tinea - T.mentagrophytes- E.floccosum)

Lesion : **interdigital dry maceration 4th +5th toe web space**

Figure 26-26. Tinea pedis: interdigital dry type The interdigital space between the toes shows erythema and scaling; the toenail is thickened, indicative of associated distal subungual onychomycosis.

Figure 26-27. Tinea pedis: interdigital macerated type A 48-year-old male with athlete's foot and hyperhidrosis for years. The skin of the webspace between the fourth and fifth toes is hyperkeratotic and macerated (hydration of the stratum corneum). The KOH+ preparation shows septated hyphae, confirming the diagnosis of dermatophytosis. Wood's lamp demonstrated coral-red fluorescence confirming concomitant erythrasma. *P. aeruginosa* was isolated on bacterial culture.

Tinea pedis
(Athlete's foot)

Diagnosis : squamous Hyperkeratosic (chronic scaly)

Causes: Fungal(Tinea - T.mentagrophytes- E.floccosum)

Lesion : **ected areas of feet look pink and are covered with fine whitish scales.**

Figure 26-29. Tinea pedis: moccasin type A 63-year-old male with scaling feet for years. Sharply marginated erythema of the medial foot with a mild keratoderma. Tinea corporis was also present on the forearms and dorsum of hands.

Figure 26-28. Tinea pedis: moccasin type A 65-year-old female with scaling feet for years. Sharply marginated erythema of the foot with a mild keratoderma associated with distal/lateral subungual onychomycosis, typical of *T. rubrum* infection.

Tinea pedis
(Athlete's foot)

Diagnosis : Acute vesiculobullous

Causes: Fungal(Tinea - T.mentagrophytes- E.floccosum)

Lesion : **vesicle and bullae**

Figure 26-30. Tinea pedis: bullous and ulcerative types A 34-year-old female with painful blisters in the webspaces and on the plantar foot. Tinea pedis was secondarily infected with *S. aureus*. A dermatophytid reaction was present on the hands with small vesicle on the fingers.

a
b

Adam Friedman, MD
JDD
JDD

Tinea manuum

TINEA MANNUM

- Chronic , pruritic with fissures and pain
- Well demarcated scaling patches, hyperkeratosis, scaling , central clearing
- DDx:
- Atopy, CD, Lichen simplex chronicus,
- Better to use systemic treatment .

Figure 26-31. Tinea manuum Erythema and scaling of the right hand, which was associated with bilateral tinea pedis; the "one-hand, two-feet" distribution is typical of epidermal dermatophytosis of the hands and feet. In time, distal/lateral subungual onychomycosis occurs on the fingernails.

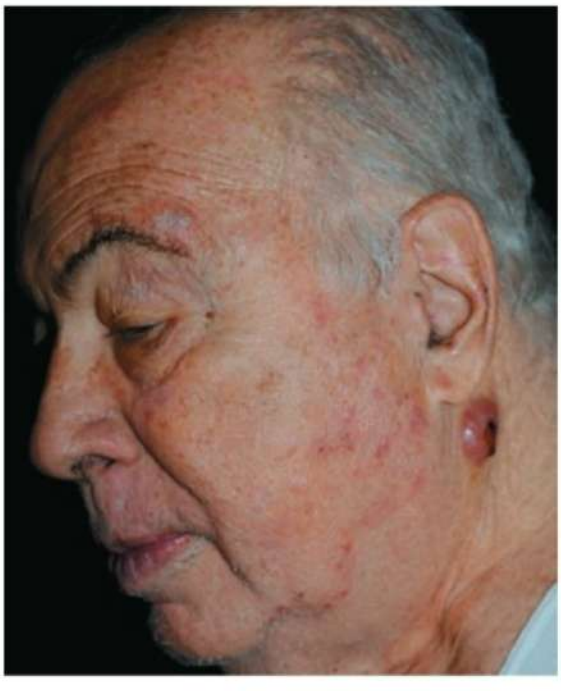
Tinea facilas

TINEA FACIALS

- Located in the face
- Well circumscribed, itchy, erythematous scaly macule or patch
- R/F: animal exposure, chronic CS exposure.
- DDx: seborrheic dermatitis, CD,

Figure 26-40. Tinea facialis A 5-year-old girl with inflammatory lesion on the periorbital skin. Papules are dermatophytic folliculitis of vellus hairs. The site has previously been treated with hydrocortisone cream.

Figure 26-41. Tinea facialis A 83-year-old immunosuppressed male with a history of prednisone treatment for polymyalgia rheumatica and chronic lymphatic leukemia. Note a facial lesions and a new nodule. Well-demarcated erythema and scaling in the beard area. SCC in situ is present on the left eyebrow. The tumor on the left neck is B-cell lymphoma; this lesion regressed when prednisone was tapered.



Tinea incognito

TINEA INCOGNITO:

- Associated with folliculitis.
- Occurs after application of topical corticosteroids
- Lesions vary from asymptomatic to pruritic and painful.
- Systemic antifungal may be prescribed.

Tinea nigra

Figure 26-21. Tinea nigra Uniformly tan macule on the plantar foot, present for several years. KOH preparation showed hyphae.

Pityriasis versicolor

Pityriasis= scale

Versicolor= multi-color

Diagnosis : pityriasis versicolor

Causes: Fungal(Tinea - malassezia globosa - malassezia fur fur)

Lesion : well- demarcated scaly patch hyper or hyperpigment

Figure 26-16. Pityriasis versicolor A 43-year-old white female with orange-tan lesions of the lateral neck. Sharply marginated scaling macules.

Figure 26-17. Pityriasis versicolor: neck A 23-year-old obese black female with discoloration of the neck for 1 year. Sharply marginated brown scaling macules on the left side of the neck. The velvety texture and hyperpigmentation of the skin of the neck is acanthosis nigricans associated with obesity.

Figure 26-18. Pityriasis versicolor: chest and arm A 36-year-old male with pigmented patches on chest and arms for several years. Multiple pink, well-demarcated scaling macules becoming confluent on the neck, chest, flank, and arm.

Figure 26-19. Pityriasis versicolor: back Multiple, small-to-medium-sized, well-demarcated hypopigmented macules on the back of a tanned individual with white skin.

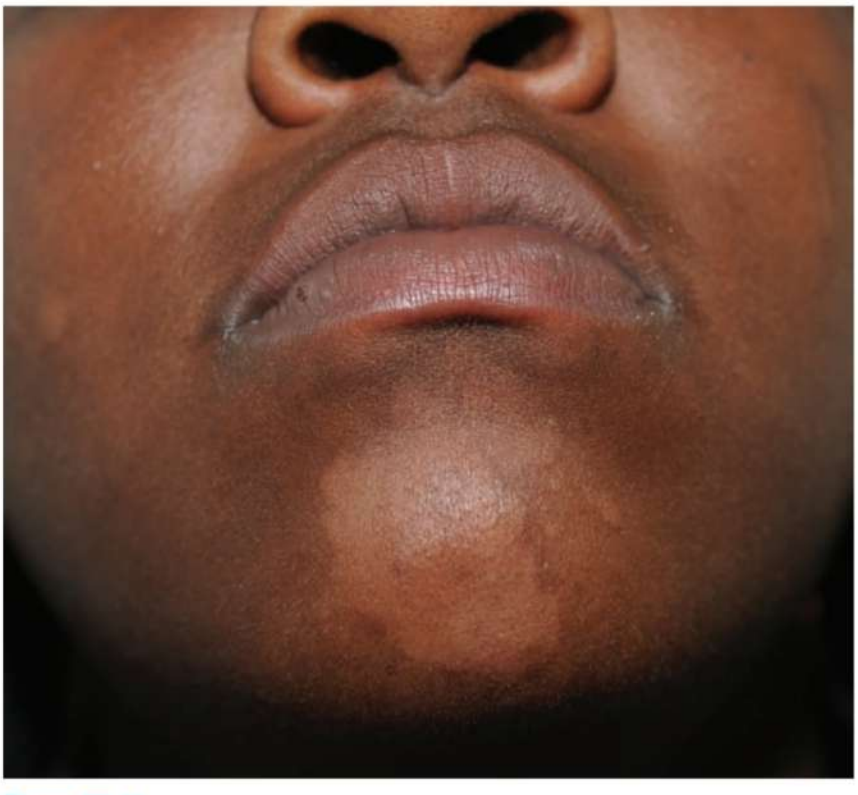


Figure 26-20. Pityriasis versicolor: face A 18-year-old black female hypopigmented scaling macule on chin. She had been applying cocoa butter to face since childhood.

CANDIDIASIS

a. Cutaneous candidiasis:

1. Candidal intertrigo, i.e. intertriginous candidiasis,
2. Napkin candidiasis.
3. Candidal paronychia.
4. Angular cheilitis.

b. Mucosal candidiasis:

1. Oral candidiasis (thrush).
2. Candidal vulvovaginitis.
3. Candidal balanitis.

A. Cutaneous candidiasis

1. Candidal intertrigo intertriginous candidiasis,

Diagnosis : erosion intergigital blastomycetica
Causes: Fungal(candidal albicans)
Lesion : macerated with a thick whitish membrane.
3rd and 4h spaces of feet
space between the ring and middle fingers

Figure 26-4. Cutaneous candidiasis: interdigital intertrigo An 80-year-old male with painful site in the webspace of the hand. Erosion with erythema is seen in the webspace between two fingers.

1. Candidal intertrigo intertriginous candidiasis,

Diagnosis : candidal itertrigo

Causes: Fungal(candidal albicans)

Lesion : PRY (well defined -glazed moist erythematous -peeling edge = satellite Lesion = papules or pustule

⬇️

Rupture ➡️ erosion

Figure 26-2. Cutaneous candidiasis: intertrigo Small peripheral "satellite" papules and pustules that have become confluent centrally, creating a large eroded area in the submammary region.

Figure 26–3. Cutaneous candidiasis: intertrigo Erythematous papules with a few pustules, becoming confluent in the inguinal area and medial thigh. The lesions occurred during a holiday trip to the Caribbean.

2. Napkin candidiasis(diaper)

Diagnosis : candidal napkin

Causes: Fungal(candidal albicans)

Lesion : PRY (ill defined erythematous pustule and satellite edge)

Depths of flexure affection

Figure 26-5. Candidiasis: diaper dermatitis Confluent erosions, marginal scaling, and "satellite pustules" in the area covered by a diaper in an infant. Atopic dermatitis or psoriasis also occurs in this distribution and may be concurrent.

3.Chronic (Candidal paronychia)

NO PAIN AND CHRONIC

Diagnosis : candidal Pronychia

Causes: Fungal(candidal albicans)

Lesion : 1.posterior nali fold -swollen Erythematous thick when pressed show whitish yellow materia

Nail plate change - coloration - traverse ridging)

Figure 32-2. Chronic paronychia The distal fingers and periungual skin are red and scaling. The cuticle is absent; a pocket is present, formed as the proximal nail folds separate from the nail plate. The nail plates show trachonychia (rough surface with longitudinal ridging) and onychauxis (apparent nail plate thickening due to subungual hyperkeratosis of nail bed). The underlying problem is psoriasis. *Candida albicans* or *Staphylococcus aureus* can cause space infection in the "pocket" with intermittent erythema and tenderness of the nail fold.

4. perleche(angular chelitis

Diagnosis: perleche(angular chelitis)
Casuses:bacteria or fungi (strept or fungi candidal albicans)
Lesion : (inflammation of angle of mouth) Crack-fissure -moist area around mouth -erythematous.

Figure 26-9. Angular cheilitis A 55-year-old male. The angle of the lips is moist and red. KOH preparation revealed candida pseudohyphae. Oral candidiasis was also present.

b. Mucosal candidiasis:

1.oral candidiasis (oral thrush)

Diagnosis:oral thrush

Casuses: fungi (candidal albicans)

Lesion : (withish curd like patche (pseudiomembranous) on tongue and bucal) ⬇️

Can be Scrubbe

and Leave➡️ raw bleeding area

Figure 26-6. Oral candidiasis: thrush White curd-like material on the mucosal surface of the lower lip of a child; the material can be abraded with gauze (pseudomembranous), revealing underlying erythema.

Figure 26-7. Oral candidiasis: thrush Extensive cottage cheese-like plaques, colonies of *Candida* that can be removed by rubbing with gauze (pseudomembranous), on the palate and uvula of an individual with advanced HIV/AIDS. Patches of erythema between the white plaques represent erythematous (atrophic) candidiasis. Involvement may extend into the esophagus and become associated with dysphagia.

Figure 26-8. Oral candidiasis: atrophic and pseudomembranous A 48-year-old male with HIV disease. The surface of the tongue is shiny and red; posterior tongue has a white coating (thrush).

2.candidal vulvovaginitis

Diagnosis:candidal vulvovaginitis

Casuses: fungi (candidal albicans)

Lesion : (thick creamy white vaginally discharge)

cocutaneous candidiasis p. 596) if recurrent.

Figure 26-10. Candidiasis: vulvitis and intertrigo Psoriasiform, erythematous lesions becoming confluent on the vulva with erosions and satellite pustules on the thighs.

2.candidal balanitis

Diagnosis:candidal balanitis

Casuses: fungi (candidal albicans)

Lesion : (almost with uncircumcised - erythema)

Figure 26-11. Candidiasis: balanoposthitis A 52-year-old uncircumcised male. Erythema and a curd-like matter is seen on the glans penis and foreskin.

Treatment of candidiasis:

1. Avoidance of any predisposing factor is very important. For example, housewives should always use rubber gloves with a separate pair of cotton gloves worn next to the skin while doing household works. Cotton gloves should be changed frequently.
2. **Topical treatments:**
   a. Nystatin cream, gel, ointment or vaginal pessaries according to the clinical condition.
   b. Imidazoles derivatives.
   c. Castellani's paint or gentian violet 1%-2 %.
3. **Systemic treatment (for extensive or resistant cases):**
   a. Mycostatin oral suspension.
   b. Azoles, e.g. ketoconazole (Nizoal®), or triazoles, e.g. fluconazole (Diflucan®).
   c. Amphotericin B given IV only in severe cases.

Griseofulvin is not effective in treating yeasts.